# Monnit Wireless Sensors and CGW2 Cellular Gateway User's Guide

## For Use With iMonnit Online Software

### MonnitLink™ CGW2 Cellular Gateway Quick Start

- Create an iMonnit user account and assign wireless gateway and sensors.
- Plug the power supply into a power outlet then connect to the gateway.
- Turn the power switch on (battery backup models only).
- Once all three lights turn green, your network is ready to bring sensors online.

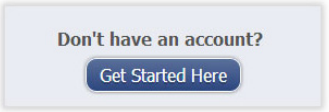
**IMPORTANT!**
DO NOT power up your Cellular Gateway until after you have created an account on iMonnit.com and added your cellular gateway and wireless sensors to the account.

## 1. Create a Monnit User Account and Setup Sensor Network

If this is your first time using the iMonnit online system site, you will need to create a new account. If you have already created an account you can skip to the "Logging into the Online System" section. The following instructions will guide you through the account creation process.

**1. In a web browser, navigate to [https://www.imonnit.com](https://www.imonnit.com).**

**2. Click the "Get Started Here" button to create an account.**




**3. Follow the on-screen instructions to enter your account and contact information.**

**4. After entering your account and contact information, you will be prompted to create your first sensor network. Simply enter a name for this network.**

**5. Add the information from your MonnitLink™ gateway then click the "Assign Gateway" button.**

**6a. Add the information from your first Monnit wireless sensor then click the "Assign Sensor" button.**

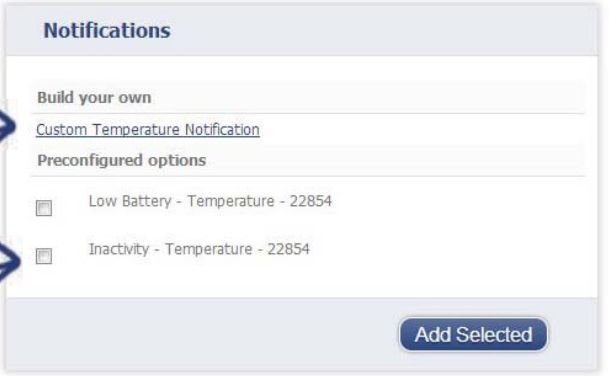
**6b. On the next screen, enter a name for the wireless sensor and use the drop down to tell us how you are going to be using the wireless sensor. (This allows us to suggest settings for your sensor.) When finished, click the "Continue" button.**

**7. Setup sensor notification(s).**

The next screen will allow you to setup notifications for the sensor that was just added to the network. You have the option of using pre-configured notifications based on suggestions from our system, or you can create your own custom notification. If you choose to create your own notification, it will be available for any similar sensors that are added to your account in the future.

Or, create your own custom notification here.

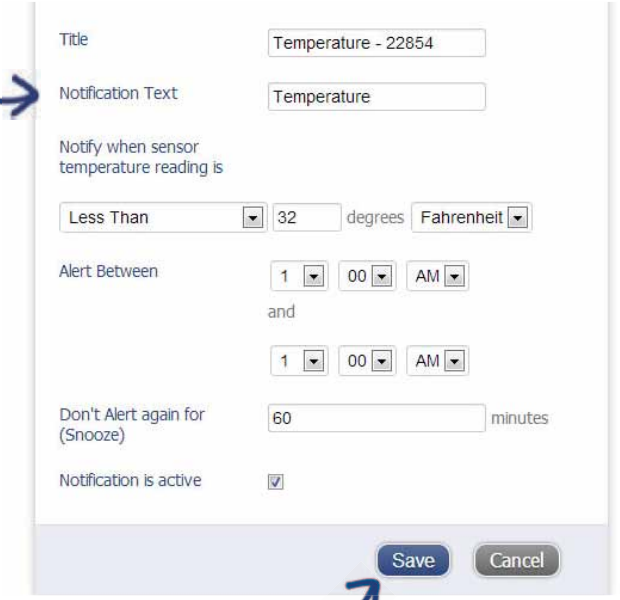
Select any pre-configured notifications you want to use with your sensor.




**Custom notifications**

To create a custom notification, click on the “Create your own” button. Set your custom notification settings and click “Save”.

Set notification settings.



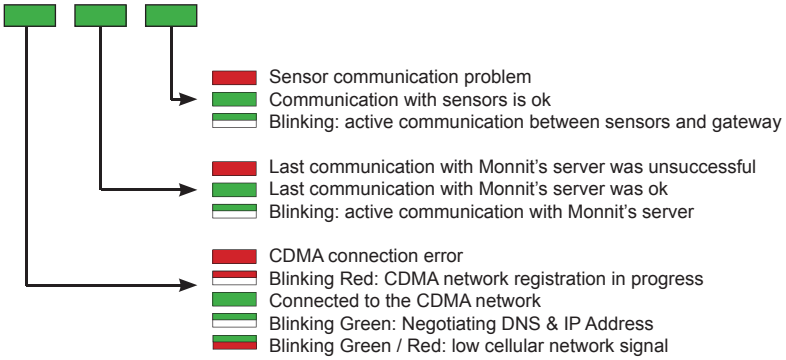

Then click “save”.

**8. Assign any additional sensors**.

When you have finished setting up the sensor, you will see a confirmation screen. At this point you can assign additional sensors to your network or begin using the system by clicking “Done”.

## 2. Using the MonnitLink CGW2 Cellular Gateway

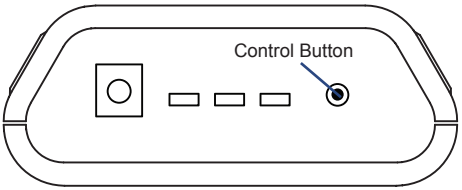
### 1. Understanding the Ethernet Gateway Lights


Sensor communication problem
Communication with sensors is ok
Blinking: active communication between sensors and gateway
Last communication with Monnit’s server was unsuccessful
Last communication with Monnit’s server was ok
Blinking: active communication with Monnit’s server
CDMA connection error
Blinking Red: CDMA network registration in progress
Connected to the CDMA network
Blinking Green: Negotiating DNS & IP Address
Blinking Green / Red: low cellular network signal

Note 1: The CGW2 resets itself after receiving new configuration from the server (ex. new HB), the LEDs will scroll green to signify power-up, then each LED will flash red as the gateway connects. When all LEDs have turned green, the reset cycle has completed.

Note 2: During SW upgrade, the middle LED will flash green. After successful upgrade all LEDs will flash green, then the gateway will restart.

### 2. Cellular Gateway Controls




A short press of the control button while lights are all green, will force immediate communication to server and exchange all sensor data currently stored in memory.

Press and hold to reset the gateway to factory settings (hold until all lights go red). This resets the gateway heartbeat to 60 minutes. You will need to login to the online system after resetting the gateway to reconfigure the gateway to your desired settings.

**Note:** If your gateway powers up and the lights do not turn green, you may have a connectivity issue. Wait a few minutes to see if the lights will turn green. If they do not, power cycle the device by disconnecting then reconnecting the power on standard cellular gateways or toggling the power switch on gateways with battery backup. If it still does not connect, try resetting the device to the factory settings. If this still does not fix the issue, call Monnit customer support. If all three lights stay solid green and red (looks amber), then there is an internal hardware problem. If, left to right, the lights are red – green – green , then there is a problem with the cell modem. If, left to right, the lights are red – red – green , there is an internal memory problem. For all of these cases, you will need to contact Monnit support.

### 3. Configuring The Cellular Gateway

The cellular gateway collects data from all sensors within range and is preconfigured to batch deliver the sensor messages to the online system at the specified heartbeat (every 60 minutes by default factory settings).

You can access gateway settings by clicking on “View Gateways” in the top bar of the “Overview” page. Clicking on a gateway in the list, opens the detail view. Click on the “Edit” tab to access the gateway’s settings.

## 3. Using Your Monnit Wireless Sensors

### Insert Batteries Into Wireless Sensors

***Important:*** *Make sure your sensors are at least 3ft. away from Ethernet Gateway.*

Peel back the black sticker cover of the battery slot and slide the coin cell battery into the sensor as shown in fig.1. It will power on within 10-20 seconds. Once online, your sensor is ready to be deployed. If you wish to change a sensor configuration, change the parameter in the software. The new parameters will be transmitted to the sensor on the next heartbeat. If you need a more immediate response from the sensor, power cycle the sensor by removing the battery, waiting 60 seconds, then re-insert the battery.

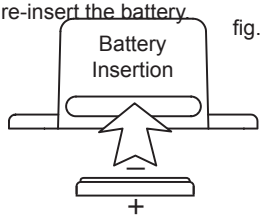


fig.1

**Notes:**

- *If the sensor status indicator does not change, reset the sensor by removing the battery.*
- *Wait 60 seconds then re-insert the battery.*
- *When inserting the battery, make sure to push the battery all the way back using a paper clip.*
- *Note the proper orientation of battery in fig.1*

***Warning:*** *Your sensors ship with a 10 minute heartbeat. It is recommended that unless you are using the AA battery solution, you should set the heartbeat to no faster than one hour to preserve battery life. When changing a sensor’s heartbeat, the new configuration information will be sent to the sensor on it’s next heartbeat. If you want to update the sensors immediately you can reset them manually.*

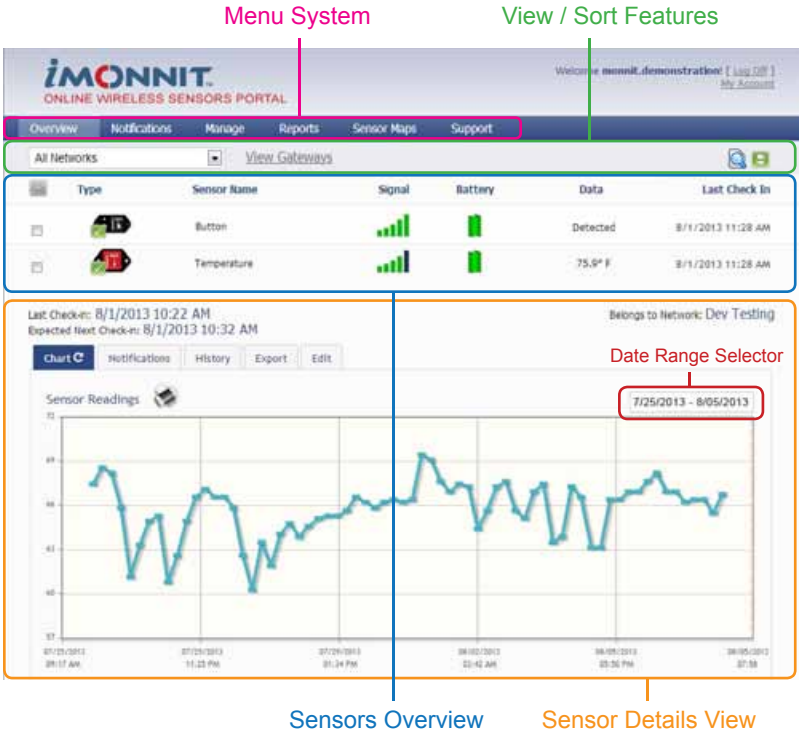
**Manual Sensor Reset Process:**

1. *Using the end of a paper clip, push the batteries out of the sensors through the small hole in the top of the sensor*
2. *Change the sensor heartbeat through the online system*
3. *Re-insert the batteries into the sensors*

## 4. Using The iMonnit™ Online Wireless Sensor System

### 1. Understanding The Online Interface

When you log into the online system, the default view shows all of your sensors last recorded data.




**Menu System**

| | |
|---|---|
| *Overview* | - Shows all sensors in the account and their last readings. |
| *Notifications* | - Manage sensor notifications and show all sent notifications. |
| *Manage* | - Manage networks, sensors and gateways. |
| *Reports* | - Printable account and sensor network reports. |
| *Sensor Maps* | - Visual maps to help you track sensor placement. |
| *Support* | - Support information for using sensors and software. |

**View / Sort Features**

This section allows you to sort the sensors being viewed and search for sensors on your account.

**Sensor Overview**

Displays sensors on your account with their last reading and status information. Clicking on a sensor row expands the “Sensor Detail View” allowing you to view detailed information for the selected sensor.

To the left side of each sensor row is an indicator to help you understand the current status of the sensor.

- Sensor is checking in and within user defined safe parameters.
- Sensor has met or exceeded a user defined threshold or triggered event.
- Sensor has not checked in (inactivity alert sent).
- No sensor readings since shipping
- No sensor readings will be recorded (Inactive)
- Edit your sensor
- Edit your sensor, however some fields are unavailable until pending transactions have been downloaded to the sensor

**Sensor Details View**

Clicking on a sensor row on the "Overview" page expands the row to include a detailed sensor view for the selected sensor.

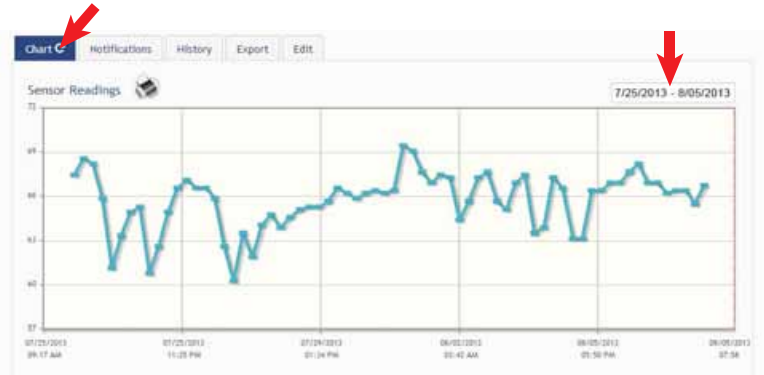
Select a tab to change between:

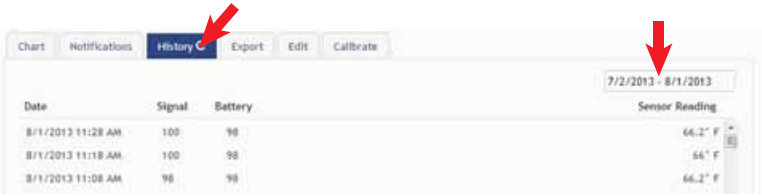
| | |
|---|---|
| *Chart* | - Displays a graphical view of the selected sensor's data. |
| *Notifications* | - Allows you to manage notifications for the sensor. |
| *History* | - Displays a history of the selected sensor's data. |
| *Export* | - Allows you to archive data by exporting as a .csv file. |
| *Edit* | - Allows you to manage sensor settings. |
| *Calibrate* | - Available on certain sensor types to provide more accurate data. |

**Note:** The data shown on the chart, notification, history and export tabs is based on the date range indicated on the upper right side of the sensor detail information. To change the date range, click inside the date box.

**2. Chart and History Views.**

Clicking on the "Chart" or "History" tabs within the sensor detail panel allows you to view the sensor's data history in a graphical chart format or as text.

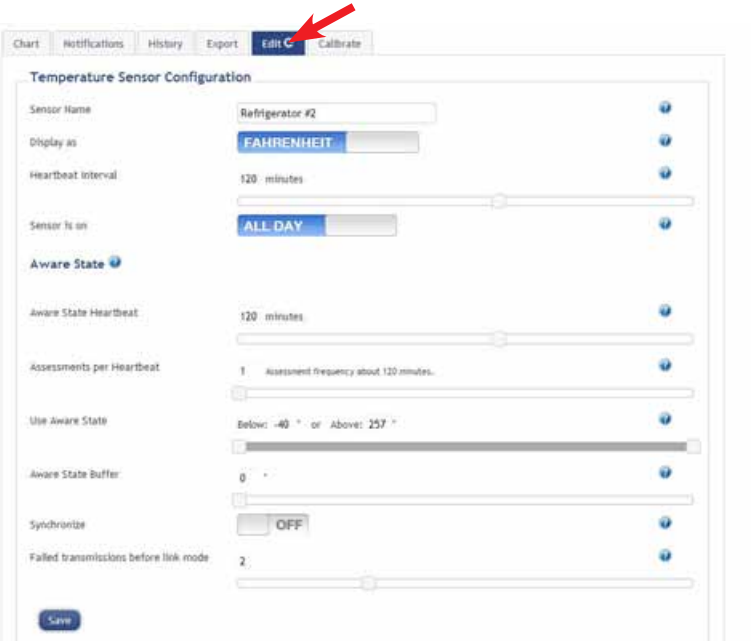





**Note:** To change the date range of the viewable information, click on the date range box at the top right of the sensor detail panel.

### 3. Configuring Sensor Settings

To edit a sensors operation settings, click on the sensor overview row to display the details view. Click on the "Edit" tab to access the sensor configuration panel.

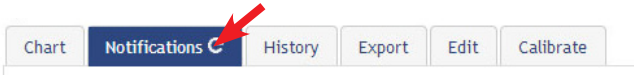



The sensor edit panel allows you to set the primary configurations for the sensor. Mousing over the question mark icon by each setting will provide an explanation of that setting. When you have finished making changes, press the "Save" button at the bottom of this section.

**Note:** Be sure to click the "Save" button anytime you make a change to any of the sensor parameters. *All changes made to the sensor settings will be downloaded to the sensor on the next sensor heartbeat (check-in). Once a change has been made and "Saved," you will not be able to edit that sensor's configurations again until the sensor has downloaded the new setting.*

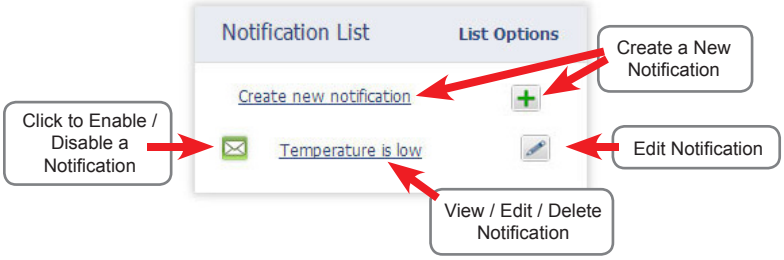
## 4. Editing and Adding Notifications

Notifications for a single sensor can be created, deleted or edited by clicking the "Notifications" tab in a sensor's detail view.




Notifications can be created, deleted or edited for any sensor or group of sensors by clicking on "Notifications" in the main menu.

### The Notification List Window




To create a new notification, click on "Create new notification", then name the notification and select the type of notification you would like to create.

### Class of Notification

There are four notification options available when creating a new notification.

- **Application** - Application notifications are sensor specific (i.e. water sensor = trigger alert when water present, temp sensor = trigger alert when temp is above 70F, etc.). If creating an application specific notification, you will need to choose what sensor type you are creating the alert for. The system will automatically populate a list of sensor types that are currently being used within the network. The notificatiion you create will be based on the selected sensor type.

- **Inactivity** - Set-up "Inactivity" notifications to alert you when your sensors have stopped communicating with the servers. Failure to set up an "Inactivity" notification will result in no email/SMS txt being sent should your sensors stop communicating with the servers.

- **Low battery** - Allows users to define a battery power percentage level that will trigger an alert from the system, warning them to replace batteries.

- **Advanced Notifications** - Allows the user to set notifications based on more advanced rules, such as comparing past data points with the current one to determine if the notification should be sent.

### Setting and Editing Notification Settings

**People to Notify**
Start typing a name into the box and the system will automatically populate the name of a user within your sensor network. If there are already multiple users on the network, a drop down list of names will appear. Select the name of the user for the notification. If the person to be notified does not have an account on the network, you may quick add them by selecting the “Add Recipient” link and entering in their contact information.

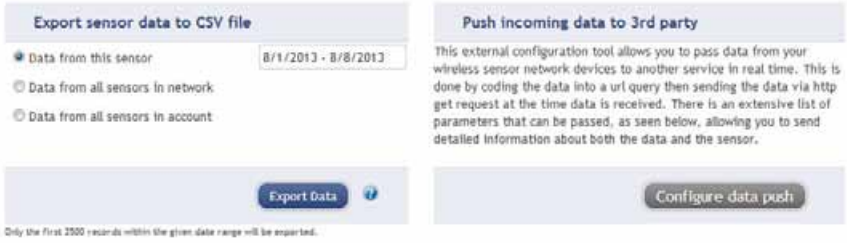
**Notification Parameters**
This area allows the user to set notification parameters such as naming the notification, customizing the notification message and setting sensor conditions that will trigger the notification.

**Assigned Devices**
Allows you to tell the system which sensor(s) will trigger the notification being created. When a notifications is sent from the system, it will automatically include the sensor name and data that caused the notification to be sent.

A notification can be assigned to multiple sensors. Application specific notifications (ex. Temperature) can only be assigned to sensors of that application type. General notifications such as “battery status”, can be assigned to any or all sensors.

## 5. Exporting Sensor Data

Clicking on the “Export” tab within the sensor data window allows you to export sensor data to a comma separated value (.csv) file or send the sensor data to an external web source.


Export sensor data to CSV file
Data from this sensor
8/1/2013 - 8/8/2013
Data from all sensors in network
Data from all sensors in account
Export Data
Push incoming data to 3rd party
This external configuration tool allows you to pass data from your wireless sensor network devices to another service in real time. This is done by coding the data into a url query then sending the data via http get request at the time data is received. There is an extensive list of parameters that can be passed, as seen below, allowing you to send detailed information about both the data and the sensor.
Configure data push

To export sensor data you must first select the date range for the data you want to export. Once the date range is selected, determine whether you want sensor data from the selected sensor only, from all sensors in the network or all sensors assigned to the account. When you are finished, click on “Export Data” at the bottom of this window. The data will be exported to a comma separated value (.csv) file format.

**Note:** Only the first 2,500 records within the selected date range will be exported.

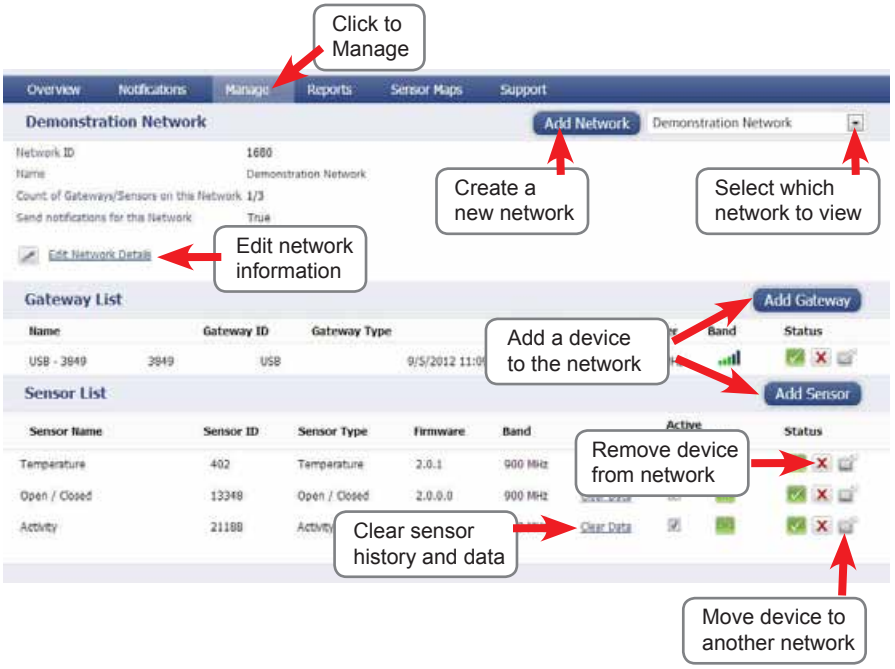
You can alternately send your sensors’ incoming data to a 3rd party by clicking on the “Configure data push” button at the bottom of the window. From this area you can pass data from your wireless sensor network devices to another service in real time. This is done by coding the data into a url query then sending the data via http get request at the time data is received. There is an extensive list of parameters that can be passed, as listed in the viewed window, that allow you to send detailed information about both the data and the sensor.

## 6. Calibrating Sensor Data

Certain wireless sensors can be calibrated for more accurate readings (ex. temperature sensors). If calibration is possible for a sensor, the “Calibrate” tab will be visible in the detail view. To calibrate a sensor, replace the last reading with the more accurate reading and click “Calibrate”. All future readings from the sensor will be based off the new calibration setting.

## 7. Manage Sensor Networks

To view or edit information about your wireless sensor network(s), click on “Manage” in the main navigation. This area allows you to edit network details, create new sensor networks, and manage wireless gateways and sensors for your network(s).




**Note:** Some buttons and features are only visible if there is more than one sensor network setup on the account, such as the network selection box in the upper right corner.

If more than one sensor network is setup on the account, you can easily move gateways and sensors from one network to another by clicking on the “Move Device” button at the far right of the device’s “Status” section.

If you clear a sensor’s data, the data history is deleted from the entire system and can not be recovered. We recommend exporting a sensor’s data history using the export function in the sensor details view (“Overview” page) before clearing the sensor’s data if you want to have a record of the data.

# Error Reporting, Troubleshooting and Support

For technical support and troubleshooting tips please visit our support library online at http://www.monnit.com/support/. If you are unable to solve your issue using our online support, email Monnit support at support@monnit.com with your contact information and a description of the problem, and a support representative will call you within one business day.

For error reporting, please email a full description of the error to support@monnit.com.

# Warranty Information

(a) Monnit warrants that Monnit-branded products will be free from defects in materials and workmanship for a period of one (1) year from the date of delivery with respect to hardware and will materially conform to their published specifications for a period of one (1) year with respect to software. Monnit may resell sensors manufactured by other entities and are subject to their individual warranties; Monnit will not enhance or extend those warranties. Monnit does not warrant that the software or any portion thereof is error free. Monnit will have no warranty obligation with respect to Products subjected to abuse, misuse, negligence or accident. If any software or firmware incorporated in any Product fails to conform to the warranty set forth in this Section, Monnit shall provide a bug fix or software patch correcting such non-conformance within a reasonable period after Monnit receives from Customer (i) notice of such non-conformance, and (ii) sufficient information regarding such non-conformance so as to permit Monnit to create such bug fix or software patch. If any hardware component of any Product fails to conform to the warranty in this Section, Monnit shall, at its option, refund the purchase price less any discounts, or repair or replace non-conforming Products with conforming Products or Products having substantially identical form, fit, and function and deliver the repaired or replacement Product to a carrier for land shipment to customer within a reasonable period after Monnit receives from Customer (i) notice of such non-conformance, and (ii) the non-conforming Product provided; however, if, in its opinion, Monnit cannot repair or replace on commercially reasonable terms it may choose to refund the purchase price. Repair parts and replacement products may be reconditioned or new. All replacement products and parts become the property of Monnit. Repaired or replacement products shall be subject to the warranty, if any remains, originally applicable to the product repaired or replaced. Customer must obtain from Monnit a Return Material Authorization Number (RMA) prior to returning any Products to Monnit. Products returned under this Warranty must be unmodified.

Customer may return all Products for repair or replacement due to defects in original materials and workmanship if Monnit is notified within ninety (90) days of customer's receipt of the product. Monnit reserves the right to repair or replace products at its own and complete discretion. Customer must obtain from Monnit a Return Material Authorization Number (RMA) prior to returning any products to Monnit. Products returned under this Warranty must be unmodified and in original packaging. Monnit reserves the right to refuse warranty repairs or replacements for any products that are damaged or not in original form. For products outside the ninety-day warranty period repair services are available at Monnit at standard labor rates for a period of one year from the Customer's original date of receipt.

(b) As a condition to Monnit's obligations under the immediately preceding paragraphs, Customer shall return Products to be examined and replaced to Monnit's facilities, in shipping cartons which clearly display a valid RMA number provided by Monnit. Customer acknowledges that replacement products may be repaired, refurbished or tested and found to be complying. Customer shall bear the risk of loss for such return shipment and shall bear all shipping costs. Monnit shall deliver replacements for Products determined by Monnit to be properly returned, shall bear the risk of loss and such costs of shipment of repaired products or replacements, and shall credit Customer's reasonable costs of shipping such returned Products against future purchases.

(c) Monnit's sole obligation under the warranty described or set forth here shall be to repair or replace non-conforming products as set forth in the immediately preceding paragraph, or to refund the documented purchase price for non-conforming Products to Customer. Monnit's warranty obligations shall run solely to Customer, and Monnit shall have no obligation to customers of Customer or other users of the Products.

Limitation of Warranty and Remedies.

THE WARRANTY SET FORTH HEREIN IS THE ONLY WARRANTY APPLICABLE TO PRODUCTS PURCHASED BY CUSTOMER. ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY DISCLAIMED. MONNIT'S LIABIITY WHETHER IN CONTRACT, IN TORT, UNDER ANY WARRANTY, IN NEGLIGENCE OR OTHERWISE SHALL NOT EXCEED THE PURCHASE PRICE PAID BY CUSTOMER FOR THE PRODUCT. UNDER NO CIRCUMSTANCES SHALL MONNIT BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES. THE PRICE STATED FOR THE PRODUCTS IS A CONSIDERATION IN LIMITING MONNIT'S LIABILITY. NO ACTION, REGARDLESS OF FORM, ARISING OUT OF THIS AGREEMENT MAY BE BROUGHT BY CUSTOMER MORE THAN ONE YEAR AFTER THE CAUSE OF ACTION HAS ACCRUED.

IN ADDITION TO THE WARRANTIES DISCLAIMED ABOVE, MONNIT SPECIFICALLY DISCLAIMS ANY AND ALL LIABILITY AND WARRANTIES, IMPLIED OR EXPRESSED, FOR USES REQUIRING FAIL-SAFE PERFORMANCE IN WHICH FAILURE OF A PRODUCT COULD LEAD TO DEATH, SERIOUS PERSONAL INJURY, OR SEVERE PHYSICAL OR ENVIRONMENTAL DAMAGE SUCH AS, BUT NOT LIMITED TO, LIFE SUPPORT OR MEDICAL DEVICES OR NUCLEAR APPLICATIONS. PRODUCTS ARE NOT DESIGNED FOR AND SHOULD NOT BE USED IN ANY OF THESE APPLICATIONS.

# Certifications

## United States FCC

*This equipment has been tested and found to comply with the limits for a Class B digital devices, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of more of the following measures:*

- *Reorient or relocate the receiving antenna*
- *Increase the separation between the equipment and receiver*
- *Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.*
- *Consult the dealer or an experienced radio/TV technician for help.*

**Warning:** *Changes or modifications not expressly approved by Monnit could void the user's authority to operate the equipment.*

**RF Exposure**

**WARNING:** To satisfy FCC RF exposure requirements for mobile transmitting devices, the antenna used for this transmitter must not be co-located in conjunction with any other antenna or transmitter.

***Monnit Wireless Sensors and Cellular Gateway Model CGW2 Contain:***

***FCC ID: ZTL-RFSC1***

*This device has been designed to operate with an approved antenna listed below, and having a maximum gain of 5.1 dBi. Antennas not included in this list or having a gain greater than 5.1 dBi are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.*

*To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that required for successful communication.*

***Approved Antennas***

The following antennas are approved for use with Monnit devices.

- *Hyperlink HG905RD-RSP (5.1 dBi Rubber Duck)*
- *Pulse W1063 (3.0 dBi Rubber Duck)*
- *ChangHong GSM-09 (2.0 dBi Rubber Duck)*
- *Specialized Manufacturing MC-ANT-20/4.0C (4" whip)*

***Monnit Cellular Gateway Model CGW2 Also Contains Cellular Module:***
***FCC ID: MIVCNN0301***

*To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that required for successful communication.*

- *The system antenna(s) connected to the Enabler HS 3001 module must be installed to provide at least 20cm separation from the human body during normal operation.*
- *The system antennas must not be co-located with any other transmitter or antenna.*
- *The system antenna(s) used with the Enabler HS 3001 module must not exceed the following levels:*
  - *Band Class 0: the maximum gain is 2.2dBi.*
  - *Band Class 1: the maximum gain is 8dBi.*

## Canada (IC)

***English***

*Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.*

*The radio transmitter (IC: 9794A-RFSC1 and IC: 4160a-CNN0301) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.*

*This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.*

***French***

*Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.*

*Le présent émetteur radio (IC: 9794A-RFSC1 et IC: 4160a-CNN0301) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.*

*Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, méme si le brouillage est susceptible d'en compromettre le fonctionnement.*

## Additional Information and Support

For additional information or more detailed instructions on how to use your Monnit Wireless Sensors or the iMonnit Online System, please visit us on the web at http://www.monnit.com/support/.

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